

REMARKS

Applicant has carefully reviewed and considered the Office Action mailed on June 15, 2004, and the references cited therewith.

Claim 73 is amended, claims 23-25 are cancelled, and new claims 85-116 are added; as a result, claims 1-22, 36-116 are now pending in this application. The amendment to claim 73 and new claims 85-86 are supported in the original specification on page 88 lines 26, page 89 line 1, and page 88 line 30. Claim 87 is supported by claim 23, claims 88-90 are supported on page 88 lines 21 and line 30 and page 89 lines 3-4. Claims 113-116 are supported by claims 1, 23, and page 88-90. No new matter is added.

Applicant paid for 96 claims (an extra 76 claims, due to multiple dependent claims) in filing the original application; 37 additional claims were paid for in the Amendment and Response of March 24, 2004 (for a total of 103 extra claims). Applicant has cancelled multi-dependent claim 23, and added new claims 91-112 in its place, each of which are supported by original claim 23. Claim 106 is also supported on page 90 line 8.

Claim Objections

Claim 73 was objected to as being substantively identical to claim 13. Claim 73 has been amended. Reconsideration and withdrawal of the objection is respectfully requested.

Provisional Double Patenting

Applicant respectfully request that, once otherwise allowable subject matter is indicated, the Examiner then present any double-patenting rejection if then appropriate, and Applicant will consider the Examiner's assertions. A Terminal Disclaimer in compliance with 37 CFR 1.321(b)(iv) will be considered if appropriate to overcome such rejections.

§102 Rejection of the Claims

Claims 1-3, 8-11, 19, 20, were rejected under 35 USC §102(b) as being anticipated by Bhattacharyya et al. (U.S. Patent No. 4,333,808). Applicant respectfully traverses. Bhattacharyya describes forming ultra-thin dielectric films (metal oxides and/or nitrides) for capacitors, wherein the adjacent conductive layers are rare-earth and transition metals such as tantalum, niobium, titanium, and vanadium. Dielectric films are used to separate plates of a

capacitor. There is no teaching or suggestion in Bhattacharyya that any of the metal oxides discussed could or would act as an electrolyte. It is improper for the Examiner to continue to assert that Bhattacharyya discloses forming or depositing an electrolyte. The Examiner has failed to provide any credible justification for substituting the word "electrolyte" for the word "dielectric" used by Bhattacharyya. Bhattacharyya does not describe a film that allows flow of ions. Further still, Bhattacharyya describes depositing a metallic electrically conductive thin film electrode 13 (see column 2 line 55) that is afterward implanted with O⁺ or N⁺ ions at an energy level of 1000eV to 50KeV (column 3 line 45 and column 4 line 48) to change the deposited crystalline structure to an amorphous structure. After the ion-beam implantation, the composite structure is transferred to an annealing oven (column 4 line 59), and that they determined that the annealing step sets the ions and enhances the stability of the capacitor during operation (column 4 lines 57-68). Further, in contrast to the Examiner's unsupported assertion that "As to claims 19-21 ... forming the electrolyte film ... to allow ion transport ... the transition metal possesses the indicated characteristics, see column 3 line 50 et seq. discussing dielectric constants," Applicant's submit that dielectric constants have nothing to do with allowing ion transport. Applicants respectfully request under MPEP 2144.03(C) that the Examiner provide a reference supporting of his above assertion, and of his assertion that "The oxide is the intercalation layer."

In contrast, the present claims are drawn to a method and apparatus for making a thin-film battery. The present invention provides a controlled energy source at the time of deposition or after the time of deposition that reorders the surface of the deposition film without substantially heating the underlying layers or substrate (see page 21 lines 10-13). An electrolyte of a thin-film battery, as is well known in the art, is a material that is resistive to the flow of electrons, but allows the flow of ions (such as lithium). Claim 1 has been amended simply to clarify that an electrolyte film allows ions to travel through it, while substantially blocking the flow of electrons, as supported at page 15 lines 15-18. There is no teaching of any such concept in Bhattacharyya or Veerasamy. The flow of such ions through the electrolyte between the cathode and anode causes electricity to flow through the circuitry connected to the terminals of the battery, since the electrons cannot flow through the electrolyte. Accordingly, the claims of the present invention are not anticipated by Bhattacharyya because there is no teaching of any

electrolyte in Bhattacharyya. Reconsideration of the rejection and an early indication of allowance of the claims are respectfully requested.

Regarding claim 19, the present application on page 11 line 30 et seq. defines "The term intercalation as used herein refers to a property of a material that allows ions to readily move in and out of the material without the material changing its phase."

§103 Rejection of the Claims

In the Examiner's remarks on Page 3 of the Final OA, the Examiner asserts that "a period of 0eV is disclosed, both in the claim and in the references." Applicants do not understand what the Examiner is saying. Bhattacharyya discloses 1KeV to 50KeV implantation. Veerasamy uses ions of acetylene and its subcomponents that have an acceleration energy. Applicants respectfully request a clarification.

Claims 4-7, 42-48, and 53-57 were rejected under 35 USC §103 (a) as being unpatentable over Bhattacharyya et al. (U.S. Patent No. 4,333,808) and PGPub 2001/0014398 (Veerasamy = USPN 6,303,226). Applicants respectfully traverse. Bhattacharyya et al. is discussed above and does not teach nor suggest depositing an electrolyte. Veerasamy has a filing date of 3/15/2001, only 8 days before the filing of the present application. The present application claims priority to a provisional filed: March 24, 2000, Serial No. 60/191,774, titled "Comprehensive Patent for the Fabrication of a High Volume, Low Cost Energy Products Such as Solid State Lithium Ion Rechargeable Battery, Supercapacitors and Fuel Cells," attorney docket SLWK 1327.003prv, filed: August 14, 2000, Serial No. 60/225,134, titled "Apparatus and Method for Rechargeable Batteries and for Making and Using Batteries" and attorney docket SLWK 1327.005prv, filed: October 6, 2000, Serial No. 60/238,673, Titled "Battery Having Ultrathin Electrolyte," each of which is incorporated by reference. Applicants respectfully submit that Veerasamy cannot be used as a reference. Further, Veerasamy only describes placing a diamond-like carbon coating on silicon glass, in order to prevent water from reacting with the soda in the glass substrate, and does not teach nor suggest depositing an electrolyte. Mixing the O⁺ or N⁺ ion implantation defeats the purpose of Verrasamy by not providing DLC, and the carbon of Veerasamy defeats the dielectric of Bhattacharyya. Further, Veerasamy describes only depositing carbon to obtain

diamond-like materials when discussing ion energies. Because there is no suggestion that such techniques would work with depositing electrolyte materials (for example, such as LiPON), and because Veerasamy does not disclose an ion-deposition energies less than 100 eV, the claims 4-7 of the present invention are accordingly not obvious Bhattacharyya in view of Veerasamy. Accordingly, reconsideration of the rejection and an early indication of allowance of the claims are respectfully requested.

Claims 12-15 and 62-73 were rejected under 35 USC §103 (a) as being unpatentable over Bhattacharyya et al. (U.S. Patent No. 4,333,808) and US Patent No. 6,576,369 (Moriguchi et al.). Applicants respectfully traverse. Bhattacharyya et al. is discussed above and does not teach nor suggest depositing an electrolyte. Moriguchi et al. describe depositing a Diamond-Like Carbon (DLC) layer using ionized acetylene and its subcomponents. Applicants cannot find a secondary ion-assist source. The Examiner asserts that Moriguchi provides the motivation for the instant combination, but fails to explain the motivation or where it might be found in Moriguchi. Further, the combination of Bhattacharyya and Moriguchi fails to provide the limitations of the present claims. Because the Examiner has not provided the motivation to combine, nor has the purported combination supplied the combination in the present claims, the claims appear allowable, so reconsideration of the rejection and an early indication of allowance of the claims are respectfully requested.

Claims 7, 49-52, and 58-61 were rejected under 35 USC §103 (a) as being unpatentable over Bhattacharyya et al. (U.S. Patent No. 4,333,808) and US Patent No. 6,086,962 (Mahoney). Applicants respectfully traverse. Bhattacharyya et al. is discussed above and does not teach nor suggest depositing an electrolyte. Mahoney et al. describe depositing a Diamond-Like Carbon (DLC) layer using ionized methane, ethane, ethylene, butane, butadiene, acetylene, hexane, cyclohexane and/or subcomponents, however, Applicants cannot find a secondary ion-assist source. The Examiner has failed to provide a motivation to combine a DLC layer-forming carbon deposition process with an ion-implantation process that implants O⁺ or N⁺. Because of this, no prima facie case of obviousness has been shown. . Accordingly, reconsideration of the rejection and an early indication of allowance of the claims are respectfully requested.

Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney (952) 278-3501 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to deposit Account No. 502931.

Respectfully Submitted

MARK L. JENSON ET AL.

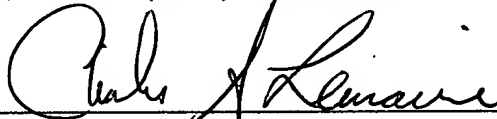
By their Representatives,

LEMAIRE PATENT LAW FIRM, PLLC
P.O. Box 11358
ST. PAUL, MN 55111
TELEPHONE: (952) 278-3500

Date

27 Sept 2004

By



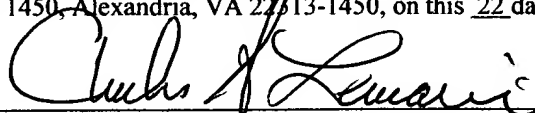
Charles A. Lemaire

Reg. No. 36,198

CERTIFICATE UNDER 37 CFR § 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelop addressed to: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 22 day of September 2004.

Charles A. Lemaire

Name



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